IN THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. (Original) A diamond n-type semiconductor comprising a first diamond semiconductor having n-type conduction;

wherein, in said first diamond semiconductor, a conductor exhibits an electron concentration negatively correlated with temperature in a temperature range of at least 100°C within at least the temperature region from 0°C to 300°C.

2. (Original) A diamond n-type semiconductor according to claim 1, wherein, in said first diamond semiconductor, the conductor exhibits a Hall coefficient positively correlated with temperature in a temperature range of at least 100°C within at least the temperature region from 0°C to 300°C.

3. (Currently amended) A diamond n-type semiconductor according to claim 1 ~~or 2~~, wherein the temperature range exists over at least 200°C within the temperature region from 0°C to 300°C.

4. (Currently amended) A diamond n-type semiconductor according to ~~any one of claims 1 to 3~~ claim 1 , wherein said first diamond semiconductor has a resistivity of 500 Ωcm or less at least at a temperature within the temperature region from 0°C to 300°C.

5. (Currently amended) A diamond n-type semiconductor according to ~~any one of claims 1 to 4~~ claim 1, wherein the electron concentration of said first diamond semiconductor is always at least 10^{16} cm^{-3} in the temperature region from 0°C to 300°C.

6. (Currently amended) A diamond n-type semiconductor according to ~~any one of claims 1 to 5~~ claim 1 , wherein said first diamond semiconductor contains more than 5 x 10^{19} cm^{-3} in total of at least one kind of donor element.

7. (Original) A diamond n-type semiconductor according to claim 6, wherein said first diamond semiconductor contains at least P (phosphorus) as the donor element.

8. (Original) A diamond n-type semiconductor according to claim 6, wherein said first diamond semiconductor contains at least S (sulfur) as the donor element.

9. (Currently amended) A diamond n-type semiconductor according to ~~any one of claims 1 to 8~~ claim 1 , wherein said first diamond semiconductor contains an impurity element other than the donor element together with the donor element.

10. (Original) A diamond n-type semiconductor according to claim 9, wherein said first diamond semiconductor contains at least 1 x 10^{17} cm^{-3} of Si as the impurity element.

11. (Currently amended) A diamond n-type semiconductor according to ~~any one of claims 1 to 10~~ claim 1 , wherein said first diamond semiconductor is monocrystal diamond.

12. (Currently amended) A diamond n-type semiconductor according to ~~any one of claims 1 to 11~~ claim 1 , further comprising a second diamond semiconductor provided adjacent to said first diamond semiconductor and turned out to be n-type,

wherein, in said second diamond semiconductor, a conductor exhibits an electron concentration not negatively correlated with temperature and a Hall coefficient not positively correlated with temperature.

13. (Currently amended) A semiconductor device at least partly employing a diamond n-type semiconductor according to ~~any one of claims 1 to 12~~ claim 1 .

14. (Currently amended) An electron emitting device having the diamond n-type semiconductor according to ~~any one of claims 1 to 12~~ claim 1 employed in at least an electron emitting part thereof.

15. (Currently amended) A method of manufacturing a diamond n-type semiconductor according to ~~any one of claims 1 to 12~~ claim 1 , said method comprising the steps of:

preparing a diamond substrate; and

epitaxially growing said first diamond semiconductor on said diamond substrate while artificially introducing an impurity element other than a donor element to said diamond substrate.

16. (Original) A method of manufacturing a diamond n-type semiconductor according to claim 15, wherein Si is artificially introduced as the impurity element to said diamond substrate.